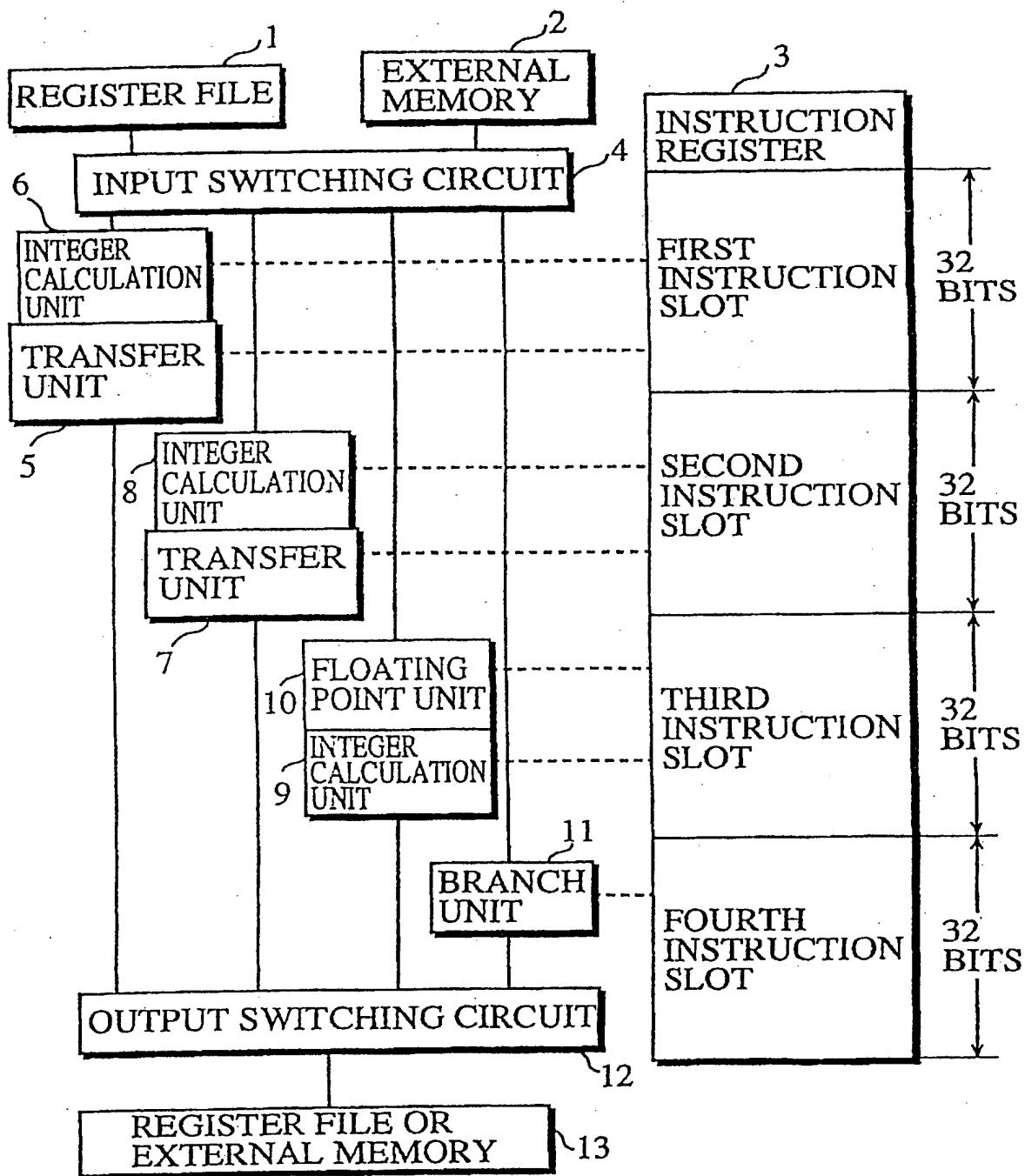


FIG. 1



00000000-00000000

FIG. 2 LONG-WORD INSTRUCTION(TWO INSTRUCTIONS)

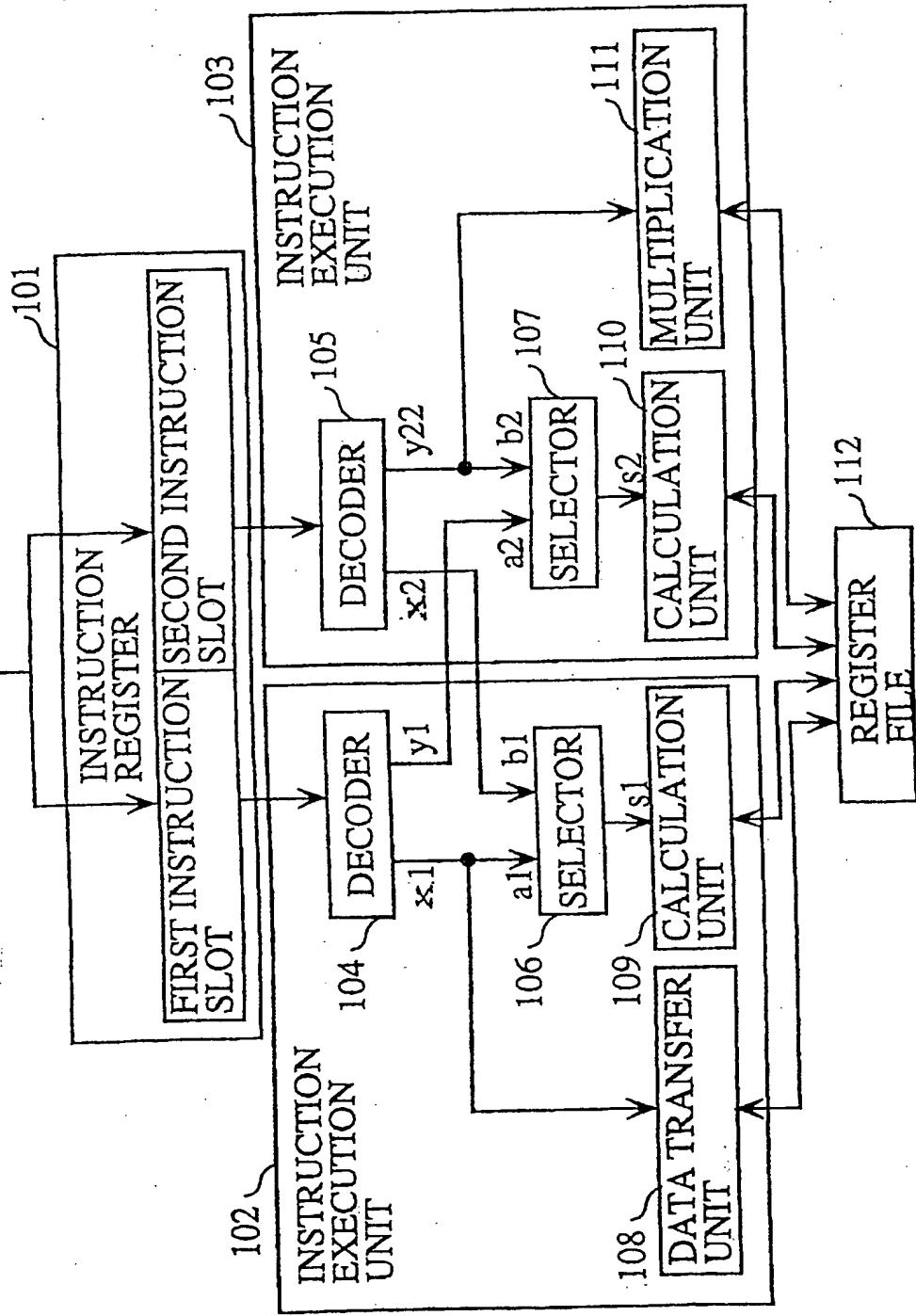


FIG. 3

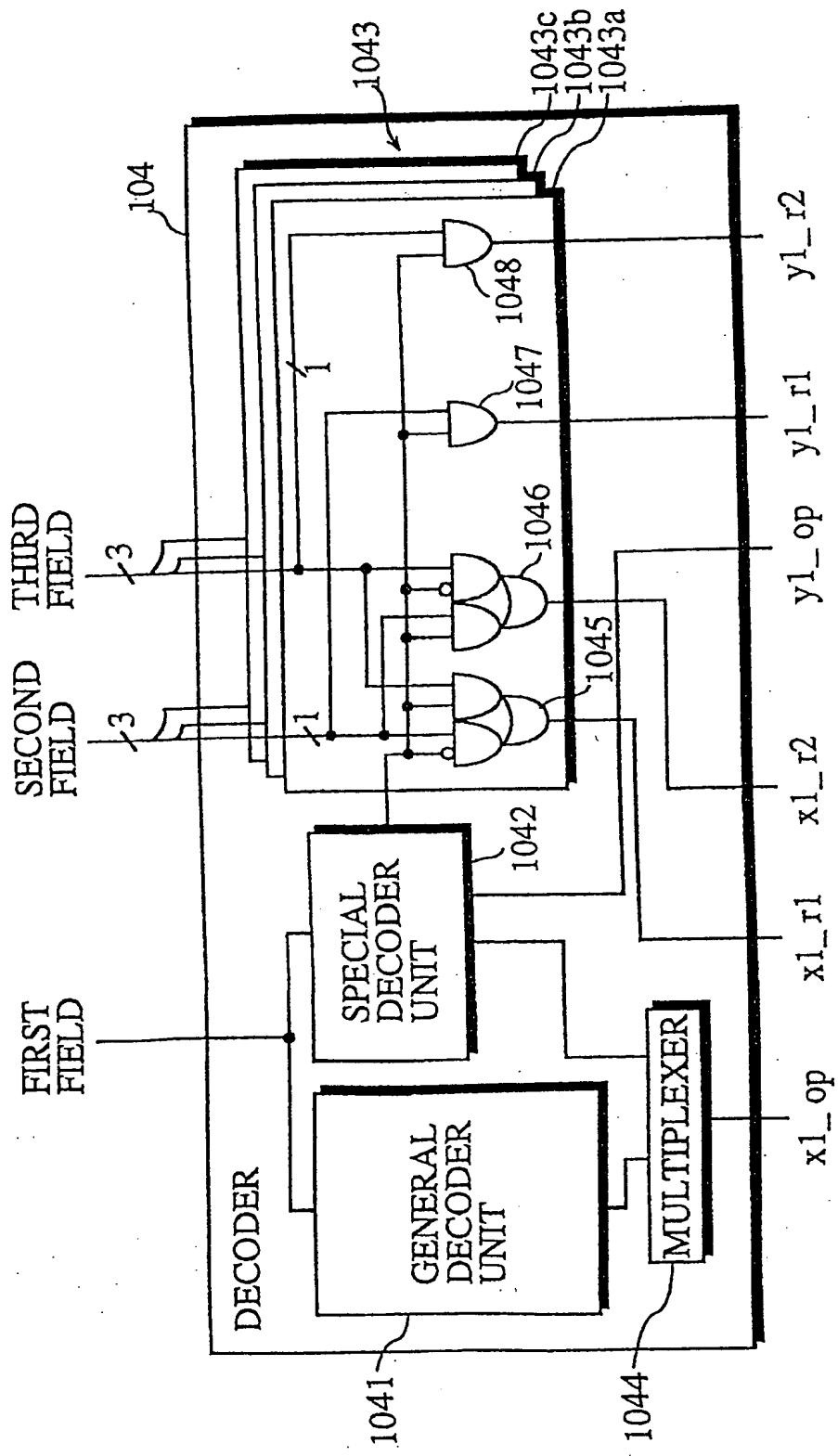
INSTRUCTION

	FIRST FIELD	SECOND FIELD	THIRD FIELD
nop	0	0	
mov	Rn	Rm	
add	Rn	Rm	
sub	Rn	Rm	
adsb	Rn	Rm	
mul	Rn	Rm	

FIG. 4

INSTRUCTION SETS	MNEMONIC	PROCESSING CONTENT	ALLOCATED SLOT	FIRST? SECOND?
DATA TRANSFER INSTRUCTION	mov Rn,Rm add Rn,Rm	TRANSFER DATA FROM Rn TO Rm STORE Rn + Rn IN Rm	YES YES	NO YES
ADD INSTRUCTION	sub Rn,Rm	STORE Rm - Rn IN Rm	YES	YES
SUBTRACT INSTRUCTION	adsb Rn,Rm	STORE Rm + Rn IN Rn AND Rm - Rn IN Rm	YES	YES
ADD-SUBTRACT INSTRUCTION	mul Rn,Rm	STORE Rm * Rn IN Rm	NO	YES
MULTIPLY INSTRUCTION	nop	NO OPERATION	YES	YES
NO-OPERATION INSTRUCTION				

FIG. 5



1053 1053c
1053b
1053a
1052
1054

FIG. 6

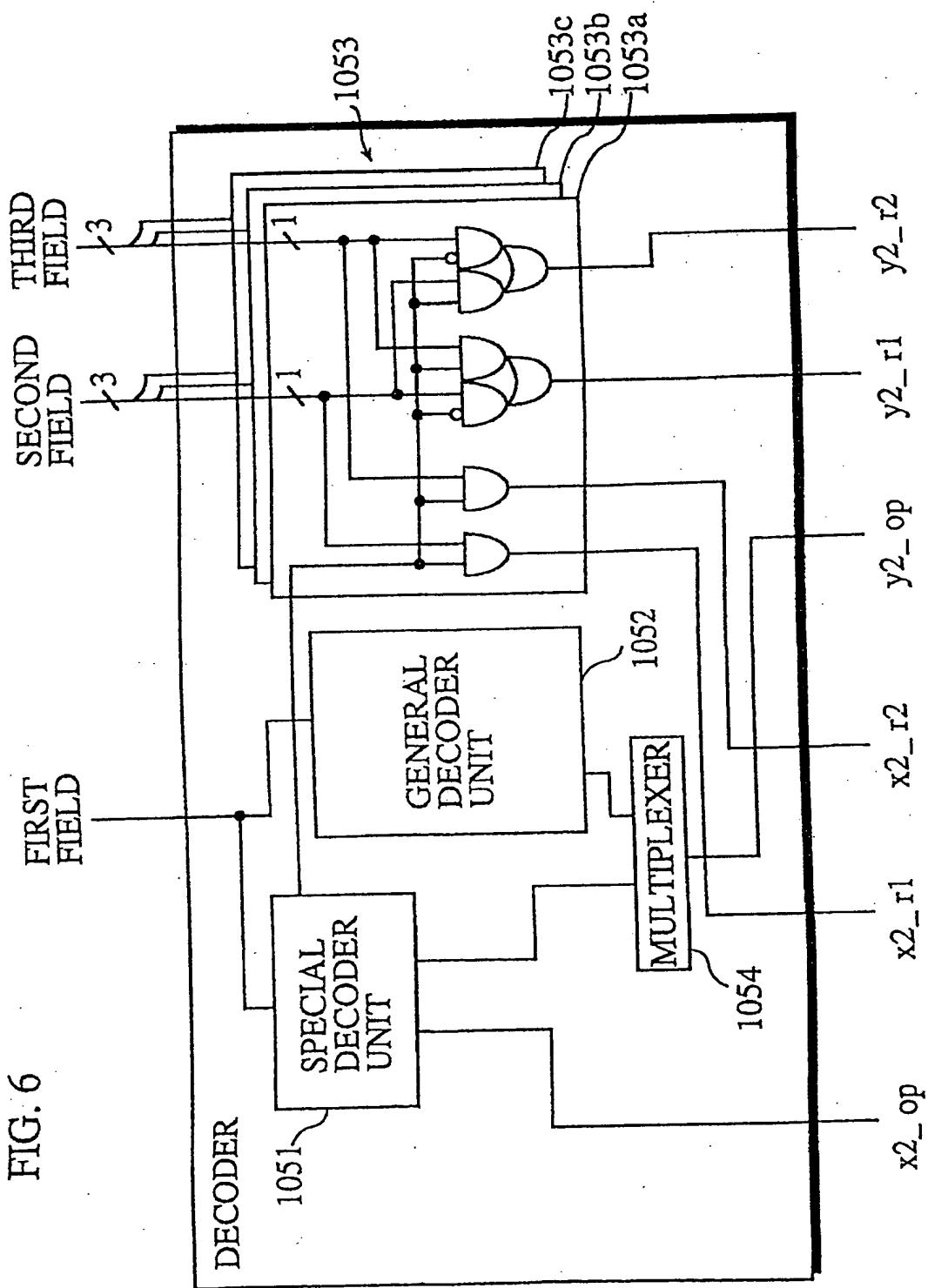


FIG. 7

OPERATION OF DECODER 104

INPUT	OUTPUT x1			OUTPUT y1		
	op	r1	r2	op	r1	r2
mov Rn1, Rm1	TRANSFER	Rn1	Rm1	NO OPERATION	--	--
add Rn1, Rm1	ADD	Rn1	Rm1	NO OPERATION	--	--
sub Rn1, Rm1	SUBTRACT	Rn1	Rm1	NO OPERATION	--	--
adsb Rn1, Rm1	ADD	Rm1	Rm1	SUBTRACT	Rn1	Rm1
nop	NO OPERATION	--	--	NO OPERATION	--	--

FIG. 8

OPERATION OF DECODER 105

INPUT	OUTPUT X2		OUTPUT Y2		r1	r2
	op	r1	r2	op		
add Rn2, Rm2	NO OPERATION	--	--	ADD	Rn2	Rm2
sub Rn2, Rm2	NO OPERATION	--	--	SUBTRACT	Rn2	Rm2
adsb Rn2, Rm2	SUBTRACT	Rn2	Rm2	ADD	Rm2	Rn2
mul Rn2, Rm2	NO OPERATION	--	--	MULTIPLY	Rn2	Rm2
nop	NO OPERATION	--	--	NO OPERATION	--	--

FIG. 9

OPERATION OF SELECTOR 106

INPUT a1				INPUT b1				OUTPUT			
x1_op	x1_r1	x1_r2	x2_op	x2_r1	x2_r2	s1_op	s1_r1	Rn1	Rm1	Rn1	s1_r2
(1) ADD	Rn1	Rm1	NO OPERATION	--	--	ADD		Rn1	Rm1	Rn1	
(2) SUBTRACT	Rn1	Rm1	NO OPERATION	--	--	SUBTRACT		Rn1	Rm1	Rn1	
(3) ADD	Rm1	Rn1	NO OPERATION	--	--	ADD		Rm1	Rn1	Rm1	
(4) TRANSFER	Rn1	Rm1	NO OPERATION	--	--	TRANSFER		Rn1	Rm1	Rn2	
(5) TRANSFER	Rn1	Rm1	SUBTRACT	Rn2	Rm2	SUBTRACT		Rn2	Rm2	Rn2	
(6) NO OPERATION	--	--	SUBTRACT	Rn2	Rm2	SUBTRACT		Rn2	Rm2	Rn2	
(7) NO OPERATION	--	--	NO OPERATION	--	--	NO OPERATION	--	--	--	--	

FIG. 10

OPERATION OF SELECTOR 107

INPUT a2				INPUT b2				OUTPUT			
y1_op	y1_r1	y1_r2	y2_op	x2_r1	x2_r2	s2_op	s2_r1	s2_r2	Rn2	Rm2	Rn2
(1) NO OPERATION	--	--	ADD	Rn2	Rm2	ADD	Rn2	Rm2	Rn2	Rm2	Rn2
(2) NO OPERATION	--	--	SUBTRACT	Rn2	Rm2	SUBTRACT	Rn2	Rm2	Rn2	Rm2	Rn2
(3) NO OPERATION	--	--	ADD	Rm2	Rn2	ADD	Rm2	Rn2	Rm2	Rn2	Rm1
(4) SUBTRACT	Rn1	Rm1	MULTIPLY	Rn2	Rm2	SUBTRACT	Rn1	Rm1	Rn1	Rm1	Rm1
(5) SUBTRACT	Rn1	Rm1	NO OPERATION	--	--	SUBTRACT	Rn1	Rm1	Rn2	Rm2	Rm2
(6) NO OPERATION	--	--	MULTIPLY	Rn2	Rm2	MULTIPLY	Rn2	Rm2	Rn2	Rm2	--
(7) NO OPERATION	--	--	NO OPERATION	--	--	NO OPERATION	--	--	NO OPERATION	--	--

FIG. 11

OPERATION OF DATA TRANSFER UNIT 108

INPUT			OPERATION CONTENT
X1_op	x1_r1	x1_r2	
TRANSFER	Rn1	Rm1	TRANSFER DATA FROM Rn1 TO Rm1

FIG. 12

OPERATION OF CALCULATION UNIT 109

INPUT			OPERATION CONTENT
s1_op	s1_r1	s1_r2	
(1) ADD	Rn1	Rm1	STORE Rm1 + Rn1 IN Rm1
(2) SUBTRACT	Rn1	Rm1	STORE Rm1 - Rn1 IN Rm1
(3) ADD	Rm1	Rn1	STORE Rn1 + Rm1 IN Rn1
(4) SUBTRACT	Rn2	Rm2	STORE Rm2 - Rn2 IN Rm2

FIG. 13

OPERATION OF CALCULATION UNIT 110

INPUT			OPERATION CONTENT
s2_op	s2_r1	s2_r2	
(1) ADD	Rn2	Rm2	STORE Rm2 + Rn2 IN Rm2
(2) SUBTRACT	Rn2	Rm2	STORE Rm2 - Rn2 IN Rm2
(3) ADD	Rm2	Rn2	STORE Rn2 + Rm2 IN Rn2
(4) SUBTRACT	Rn1	Rm1	STORE Rm1 - Rn1 IN Rm1

FIG. 14

OPERATION OF MULTIPLICATION UNIT 111

INPUT			OPERATION CONTENT
y2_op	y2_r1	y2_r2	
MULTIPLY	Rn2	Rm2	STORE Rm2 * Rn2 IN Rm2

FIG. 15

1. $b[0] = a[0] + a[3]$
2. $b[1] = a[1] + a[2]$
3. $b[2] = a[1] - a[2]$
4. $b[3] = a[0] - a[3]$
5. $c[0] = (b[0] + b[1]) * f_0$
6. $c[1] = (b[0] - b[1]) * f_0$
7. $c[2] = b[2] * (f_1 - f_2) + (b[2] + b[3]) * f_2$
8. $c[3] = b[3] * (f_1 + f_2) - (b[2] + b[3]) * f_2$

FIG. 16

VALUES OF PROGRAM VARIABLES
STORED IN REGISTERS

REGISTER	VARIABLE
R0	a[0]
R1	a[1]
R2	a[2]
R3	a[3]
R4	f0
R5	f1 - f2
R6	f1 + f2
R7	f2

FIG. 17

LONG-WORD INSTRUCTION	FIRST INSTRUCTION SLOT	SECOND INSTRUCTION SLOT
1.	adsb R2, R1	nop R3, R0
2.	mov R1, R8	adsb R5, R1
3.	mov R0, R9	mul R6, R0
4.	add R9, R8	mul R7, R8
5.	adsb R2, R3	mul R4, R2
6.	add R8, R1	mul R4, R3
7.	sub R8, R0	

FIG. 18

LONG-WORD INSTRUCTION	FIRST INSTRUCTION SLOT	SECOND INSTRUCTION SLOT
1.	mov R1, R8	sub R2, R1
2.	mov R0, R9	sub R3, R0
3.	mov R1, R10	mul R5, R1
4.	mov R0, R11	mul R6, R0
5.	add R11, R10	add R2, R8
6.	add R3, R9	mul R7, R10
7.	add R10, R1	sub R10, R0
8.	mov R9, R12	add R8, R9
9.	sub R8, R12	mul R4, R9
10.	nop	mul R4, R12

FIG. 19

